Minister's Advisory Council on Information Technology

# *Reaching Forward, Looking Outward*

Report to the Minister

October 2005

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106-01163/

# Letter of Transmittal

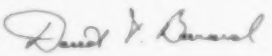
October 27, 2005

The Honourable Andrew Thomson
Minister Responsible for Information Technology

Dear Sir:

On behalf of the Minister's Advisory Council on Information Technology, I have the honour of submitting our Report and recommendations to you on building a vibrant IT sector in the province and on utilizing IT to stimulate economic development in other key sectors of the economy.

Respectfully submitted,



Dr. David Barnard,
Chair

# Executive Summary

In September 2004, the Honourable Andrew Thomson, the Minister Responsible for Information Technology, established the Minister's Advisory Council on Information Technology to provide independent advice and expertise to the Government of Saskatchewan on creating an environment that supports economic growth in the IT sector. The Council's nine members were drawn from leaders in the industry and academic sectors who met regularly over the following year to consider how to best promote industry growth in the province.

During the course of its work, the group consulted with experts and received a good number of thoughtful and provocative presentations from the IT industry and economic development organizations in the province. The Council is grateful for their contributions.

Through its preliminary research the Council learned that available data on the province's IT sector was scant, but could conclude initially that:

- Saskatchewan's IT sector appears to be small as a percentage of the overall provincial economy compared to those in other provinces and jurisdictions — perhaps surprisingly small given that advanced technology is identified as one of Saskatchewan's key sectors — yet does not appear to have received the same attention as other key industries such as oil and gas.
- Expectations and enthusiasm in and around the sector remain high.
- There is a diversity of small local firms (software, services and some hardware), branches of larger national and international service companies, as well as public sector activities (executive government, the Crown sector, education). Large hardware firms are not a major player on the Saskatchewan IT scene.

The Council determined that good data was essential and, through the Information Technology Office (ITO), was responsible for the production of two research reports that provide a detailed statistical picture of the industry in the province and establish benchmarks to measure the impact of its recommendations in the future.

This Report summarizes what the Council heard during the course of its deliberations and what it learned from its research and from experts. It contains the Council's observations on the most effective ways to encourage IT sector growth in Saskatchewan, and includes 15 recommendations on government actions that will provide the greatest opportunity to encourage that growth.

The Council explored opportunities in the following areas:

- ***Capacity building*** – There is a widespread understanding that the sector has the capacity to grow, that growth would be good for larger economic growth both in the municipal economies of Regina and Saskatoon and in the provincial economy, and that firms now operating in the province would like to grow. Key actions that will build capacity are:

  - Provide sufficient broadband, or high-speed capacity to meet business requirements.
  - Assist Saskatchewan companies to get the expertise they need and help recent IT graduates get jobs in the province.
  - Reform government procurement based on strategic partnerships with shared risk.
  - Clarify how Crown corporations and the Government of Saskatchewan will stimulate capacity in the provincial IT sector.
  - Establish an industry association and an on-going advisory council to government.

- ***Commercialization*** – Stimulate a broad set of commercialization activities that use our locally-developed knowledge to create wealth, whether or not the ideas are protected by patent.
  - Include the IT industry as a targeted growth sector.
  - Allow the private sector to retain ownership of intellectual property.

- ***Capitalization*** – The IT sector in Saskatchewan should be focused on venture capital rather than traditional capitalization. Key actions include:
  - Provide a tax credit to stimulate capital and mentorship to early-stage or start-up IT companies.
  - Establish a new venture capital fund.
- ***Citizen service*** – Improve government's service delivery to the people of Saskatchewan by establishing a formal mechanism that would enable companies and the government to collaborate on integrated service delivery initiatives.

*Innovation Place, Saskatoon*

## 1.0 Introduction

### *1.1 Process*

In September 2004, the Honourable Andrew Thomson, the Minister Responsible for Information Technology, established the Minister's Advisory Council on Information Technology to provide independent advice and expertise to the government of Saskatchewan on creating an environment that supports economic growth in the IT sector.

The Council's nine members were drawn from leaders in the industry and academic sectors who met regularly over the following year to consider how best to promote industry growth in the province.

To assist us in our work, we received submissions from representatives of the province's IT sector and economic development bodies and heard several presentations from experts in their fields (see Appendix 4). We wish to thank those who helped us by providing submissions, presentations, data and opinions, and we appreciate the frank discussions about challenges and opportunities for the industry in Saskatchewan.

We are also grateful to the Information Technology Office for hosting an IT Symposium in November 2004 to provide an opportunity for industry representatives to identify issues. The industry's insights and comments were invaluable in our work. We look forward to a follow-up Symposium in which the industry will provide input into the "next steps."

Finally, with respect to process, we note the following: because there is a great deal of interest in the development of the sector, and because the mandate of the Council gave us a year in which to do our work, some actions have been taken during the course of our activities. Specifically, actions that we have discussed with representatives of government have, in some cases, already been taken.

## *1.2 Background*

Since our task was to advise the Minister and the Government on aspects of information technology in the province, it seemed natural to us to ask questions about the current state of the sector. Getting answers to such questions has proven to be more challenging than we had anticipated. There is no agreed description of the sector, and there is, consequently, no good time series data to show changes within the sector.

We learned from Doug Elliott of *SaskTrends Monitor* that, while there is plenty of data about the national or regional IT sector, there is limited information about the IT industry in Saskatchewan. Due to the province's small population and industry base, Statistics Canada and other analytical organizations generally include Saskatchewan statistics with those of Manitoba. Further, there is no information about IT activities embedded in other sectors (and we know there is a great deal of it), the overall contribution to Gross Domestic Product, or long-term trends.

We considered Saskatchewan-specific IT industry data to be essential to our work and, as a result, two studies have provided data on the province's IT sector that both informed our recommendations and provided baseline data that can be updated annually to measure progress in the industry. First, a report from IDC Canada told us that 62 percent of IT firms produce IT services rather than IT goods, that the province makes up 2.7 percent of total IT spending in Canada, and that the average earnings of the province's IT workforce ranks sixth in Canada. Second, Fast Consulting conducted a survey of Saskatchewan IT companies that provided more detailed data. Thanks to the number of firms that responded, Fast considers the results to be accurate and valid.

We learned a number of things about Saskatchewan's IT industry from the Fast survey:

- Saskatchewan's Compound Annual Growth Rate (CAGR) is only 6.8 percent compared to the national figure of 11.9 percent.

- About one half of companies employ one to five employees, and one quarter employ six to 10 people.
- 89 percent of companies report that they are part of the IT services sector, a higher number than previously available data indicated.
- Almost one half of businesses generated over $250,000 in gross sales in the past year.
- About three quarters of the companies surveyed have clients outside of Saskatchewan, and almost 20 percent do most or all of their business outside the province.
- Almost half of the companies are involved in research and development.

- Only four percent of firms reported venture capital placements in the last year.
- 71 percent of companies had procurement opportunities in the last year, with the majority coming from private sources and the provincial government. Over half of the procurement opportunities were valued at $250,000 or less.
- 60 percent of businesses surveyed said they would want to belong to an industry association.

We also learned from the documentation prepared by the Strategic Intelligence Group for the ITO's IT Symposium in November 2004. Some of the main points from this work are:

- Demographic trends, including out-migration of youth, an aging population, and a growing young Aboriginal population make it difficult for those in the IT sector to attract and retain employees and customers.
- Economic opportunities and diversification can be facilitated by IT if there is sufficient investment in the sector.
- As rapid technological change occurs, the private and public sectors must cooperate to be responsive and flexible.
- Growth in public-sector IT spending alone is not sufficient to sustain growth.

There was a consistent desire for growth in the sector evident in this work, and we found that desire reflected in everything that we heard from sector participants.

We learned about Saskatchewan government IT activities as a result of a research scan conducted for the Council. Saskatchewan's IT policies have chiefly focused on improving service delivery to citizens through e-government initiatives such as Government Online and infrastructure projects like CommunityNet. The government is currently rationalizing its IT operations in a consolidated partnership led by the ITO, and is continuing to examine how IT can help it meet its objectives of delivering high-quality services to the people of Saskatchewan.

From our research scan and from materials submitted to us we learned that governments at all levels are moving more aggressively into the use of IT — some very aggressively — especially for e-government, i.e., the IT-mediated delivery of services to citizens, most frequently using the Internet. Cluster-based economic development strategies have become popular in many jurisdictions, and often these include the explicit recognition of the importance of IT (sometimes with communications being included in the sector definition, and sometimes not). Further, in many jurisdictions, IT is seen as an enabler of the economic growth provided by other clusters or sectors, even if it is not a primary driver of local growth.

We learned a great deal about perceptions of Saskatchewan's business and government cultures, and opportunities to expand the IT industry from companies and organizations that made submissions to us.

As can easily be observed, much of what we learned is descriptive because there is a shortage of Saskatchewan-specific data. We carried out our work against this less-than-adequately documented background, but at the end of this Report, we will recommend that the situation be changed now and for the future.

To summarize some of the main points we learned:

- Saskatchewan's IT sector appears to be small as a percentage of the overall provincial economy compared to those in other provinces and jurisdictions — perhaps surprisingly small given that advanced technology is identified as one of Saskatchewan's key sectors — yet does not appear to have received the same attention as other key industries such as oil and gas.
- Expectations and enthusiasm in and around the sector remain high. The existence of this Council is, itself, an indication of the Government's level of expectations about the significance of the sector.
- There is a diversity of small local firms (software, services and some hardware), branches of larger national and international service companies, as well as public sector activities (executive government, the Crown sector, education). Large hardware firms are not a major player on the Saskatchewan IT scene.

*Regina Research Park*

## 2.0 Addressing Our Mandate

The mandate given to the Council was:

> *To provide expert independent advice to the Minister and the Government of Saskatchewan on making Saskatchewan a global leader in the knowledge-based economy, including:*
>
> - ***Capacity building*** *– relevant education and continuing education, job creation and other supports for economic development.*
> - ***Commercialization*** *– promoting collaboration between researchers, industry and other entrepreneurial initiatives.*
> - ***Capitalization*** *– attracting private venture capital to Saskatchewan.*
> - ***Citizen services*** *– delivering government services to Saskatchewan citizens.*

We address each of these in the next four sections of our report. The relationships among these various aspects of our work are complex and we realize that some decisions about placement of material into the sections of the report may appear to be arbitrary — because they are arbitrary.

We begin each section with a summary of some of what we heard from participants in our processes. We then present some of our own distillations of the best ideas that we found in the presentations, in the literature, and from our own experience. We also present recommendations in each section for the Minister and the Government.

### *2.1 Capacity Building*

A good deal of the Council's time was spent discussing various aspects of the capacity issue, both in our own deliberations and in the presentations that were made to us. There is a widespread understanding that the sector has the capacity to grow, that growth would be good for larger economic growth both in the municipal economies of Regina and Saskatoon and in the provincial economy, and that firms now operating in the province would like to grow.

According to the Fast survey, Saskatchewan has about 300, or less than one percent of IT firms in Canada (*Figure 1*). Based on the fact that Saskatchewan accounts for 2.54 percent of the country's IT GDP, Fast extrapolates that Saskatchewan should have 813, or 2.54 percent of firms.

*Figure 1*

Number of Saskatchewan ICT Firms Compared to the Number of Canadian ICT Firms
Number of Canadian ICT Firms 32,000
Number of Saskatchewan ICT Firms 300

Source: IT Industry Benchmarks and Measures (Fast Consulting, October 2005)

There is less common understanding on how growth can occur. Some participants in the sector at times seem to be excessively focused on government contracts as the source of growth. This simply is unsustainable. Since government revenues are derived from the performance of the overall economy, government expenditures surely cannot drive that performance on their own. This view that government contracts can drive sector growth is, admittedly, extreme, but seems to lurk just below the surface in some conversations.

In fact, the real potential for growth in the IT sector in Saskatchewan comes from a combination of careful government investment and the development of markets external to the province via the export of technology and expertise.

As we consider the local environment, there are a number of factors that have been identified as potential enhancers of growth.

- As a result of SaskTel's investments and the development of CommunityNet, there is a good communication infrastructure

in the province. By analogy with the transportation network, the province has a well-developed high-speed or broadband network for communicating data. Especially when the geographic scale of the province is taken into account, the broadband infrastructure reaches an impressively large number of communities, businesses and residents. This infrastructure should continue to be developed.

As a province we should be taking strategic advantage of the investments that have been made to build capacity by actually using that capacity more effectively than we are doing at this point. Neither the public sector nor the private sector seems to be taking full advantage of this resource.

- The education level in the province is good by international standards. While other jurisdictions around the world are also investing heavily in education in fields related to IT, and we thus should not rest on our laurels as though there is no competition, Saskatchewan has programs of good quality and good availability at the college level through SIAST and at the university level through both universities.

  There is a well-known challenge in keeping educated young people in the province, but we are certainly producing a good number of them.

- Some argue that the cost of living in Saskatchewan is lower than it is for some other so-called "near shore" centres. That is, the cost of living is lower for IT workers in Saskatchewan than it is for IT workers in many other parts of North America. Thus, businesses can operate here at a lower cost since wages do not need to be as high as they would be in other parts of the continent. The conclusion drawn from this argument is that Saskatchewan should be competitive relative to other North American jurisdictions for attracting activities that can be outsourced from other places.

  This argument needs to be held in balance with other factors, though. While it is true that costs are somewhat lower here than in some other places, it is difficult to find large numbers of high quality potential employees who will come to a city or region simply because the costs are low. Author Richard Florida, for example, argues that people are

attracted to environments for other reasons than cost.[1] If workers can be compensated at a higher level to live in another place, and if the perceived levels of professional opportunities and lifestyle choices available are better in those other places, the cost factor is eliminated as a decision criterion. In fact, we can quickly conclude that most people in Canada, the United States, and the rest of the world choose to live in larger cities that have higher costs and compensating higher wages, because they have greater choices available. This is precisely why people leave Saskatchewan and head to Calgary or other parts of Canada.

- Some also argue that lower costs of infrastructure here in Saskatchewan constitute an advantage for local development, but we do not find this to be a compelling case either for the above reasons.

- Some believe that Saskatchewan's history of cooperation and its small population provide greater opportunities for collaborative arrangements. "It's a small province" and "everyone knows everyone else" are commonly heard, and this is viewed as one of the province's strengths. Accordingly, it is possible to put together partnerships quickly.

- Finally, some have argued that relative to other regions around the world where workers whose first language is not English yet who must deliver services to the international business community in English, Saskatchewan has an advantage.

  Again, though, while this is true, it is clear that linguistic ability in many parts of the world is, at least, as advanced as it is here, and that many other parts of the world are successfully presenting themselves as places where IT-related products and services can be developed successfully and delivered to international markets.

Offsetting the perceptions, or wishes, of advantages, there are some perceived disadvantages in Saskatchewan:

- Some perceive that IT is often viewed as a cost rather than as an investment to enable other activities to flourish. This comment is sometimes directed at government, relative to its treatment of the sector as a whole, or at particular

[1] Richard Florida. *The Rise of the Creative Class*. New York: Basic Books (2002).

organizations, where the local IT group is viewed as overhead rather than a facilitator of business growth. Some managers in the public sector, in particular, have been known to say that they have never seen an IT project deliver on its promise, and they do not expect changes from that pattern.

- Some perceive a relatively small number of start-up companies in Saskatchewan compared to other parts of the country. This is perceived to be particularly true with respect to IT start-ups. This is recognition of a symptom, not a diagnosis of the problem. We will return to this matter later.

- Some perceive a shortage of workers skilled in management and sales. This perhaps speaks to the specific kind of preparation provided to students in Commerce at the University of Saskatchewan and in Business Administration at the University of Regina. Those in the education sector respond to such criticisms by saying that they are preparing students for an entire career and also imparting some basic skills for the short term, but that some employers are too focused on the short-term skills and ignore the longer-term contributions that new employees will make and for which they must be prepared. In fact, enrolment in these programs — and in business programs at SIAST (Saskatchewan Institute of Applied Science and Technology) — is high.

  At least part of the problem here is, as has already been mentioned, the inability to retain young people in the province who have these skills. Our research has shown that the majority of the province's IT firms have 10 or less employees. Often smaller companies do not have the capacity to hire and develop workers over the long term. Larger firms, mostly located in other provinces, do have the resources to make longer-term investments in their employees, and thus provide more career opportunities for our province's young people.

Although Saskatchewan may not be a leader in attracting people to the province, we believe that there are unique Saskatchewan characteristics that influence many people's choices to remain in Saskatchewan and contribute to its cultural and economic vitality. First, Saskatchewan is booming economically. As the 2005 *Saskatchewan Action Plan for the Economy* notes, with its diversified and growing economy,

Saskatchewan is no longer a recipient of federal equalization payments, signalling our economic strength in relation to other Canadian provinces.

Further, we believe there is a stronger sense of place and attachment here than in other parts of country — this is an advantage on which we can capitalize. For example, a 2004 *Youth Quality of Life Survey* indicates that nearly half of Saskatchewan youth believe their career goals could be better achieved if they moved away from the province. At the same time, over three quarters said they would never leave Saskatchewan if all their career objectives could be met in the province. We need to capitalize on that strong emotional attachment to Saskatchewan.

As we have noted, major competitive advantages that we have are the relatively advanced infrastructure that has been developed and a talented workforce, some of which are committed to working in the province. We believe that there are ways to exploit those assets to build capacity and increase economic development.

***CommunityNet***

In today's economy, both businesses and governments are relying on Internet-based technologies in order to streamline business transactions and increase services to customers. This in turn has prompted the need for higher Internet bandwidths than traditional broadband or high-speed Internet services provide.

In Saskatchewan, SaskTel and cable companies provide commercial high-speed Internet services, and the public sector (the provincial government, health districts, schools and many libraries) use CommunityNet.

The Saskatchewan government's CommunityNet is a high-speed, high bandwidth broadband and wireless province-wide telecommunications network with significant capacity. This network connects more than 800 schools and regional colleges, including those on First Nations reserves, 310 health facilities, 162 public libraries, and 256 government offices.

While CommunityNet provides the anchor for SaskTel to expand its high-speed commercial offerings to an increasing number of communities, this network is not available to the private sector. Private citizens and businesses are still limited to an expensive, lower bandwidth and lower speed Internet service in most communities.

We believe there is a case to be made for making more bandwidth available to the private sector at commercially competitive rates. Only then can the citizens and businesses of Saskatchewan leverage this valuable investment in CommunityNet to grow this province's economy and strengthen our communities.

***RECOMMENDATION 1:***

***We recommend that the Government of Saskatchewan continue to develop the use of the broadband infrastructure, and make it available to the private sector at commercially competitive rates to allow Saskatchewan companies to exploit this strategic telecommunications advantage.***

### *A Talented Workforce*

While Saskatchewan post-secondary institutions are producing well-qualified graduates in science and engineering, there are varying perceptions of the job market in the province, resulting in the loss of our skilled young people to neighbouring Alberta. Employers say they can't find skilled workers, and graduates say they can't find jobs. Rather than try to sort out this chicken-and-egg job picture, we focused on how to encourage young people to stay in the province and to provide skilled workers to the industry. Given the fact that the majority of Saskatchewan IT companies have up to 10 employees, they face the problems of other small businesses in that they sometimes cannot afford the expertise they need to develop, commercialize and market their products. The federal "First Jobs in Science and Technology Strategy" offered by Western Economic Development provided small and medium sized companies with subsidies to hire the skilled help they needed

but couldn't otherwise afford. We believe that the provincial government could contribute to its objectives of increasing IT companies' capacity and retaining skilled young people by offering a similar program to the province's IT SMEs (small and medium enterprises).

Given Saskatchewan's demographic profile, we think that there is special need to attract Aboriginal youth to pursue a career in the IT industry. The province is experiencing significant growth in the Aboriginal population, yet Aboriginal people are severely under-represented in the IT industry. Programs that encourage Aboriginal youth to pursue math and science education would better prepare them for a potential IT career, and allow the industry to capitalize on this demographic growth curve.

***RECOMMENDATION 2:***

***We recommend that the Government of Saskatchewan offer a "First Jobs" program that assists SMEs in hiring the expertise to develop, commercialize and market IT products and services, and provide employment opportunities for recent IT graduates in Saskatchewan.***

### 2.1.1 Procurement

There are a number of perceptions about provincial government procurement practices in Saskatchewan. Many private sector participants in government procurement processes are unhappy with the experiences they have had for one reason or another.

- Some see procurement decisions as being so focused on choosing the lowest-cost bid that full costs (system life cycle costs) are not taken into account and false economies govern decisions that have significant long-term implications.
- Some see procurement as the opportunity for government acting as a catalyst to strategically stimulate the industry, as has been done in other jurisdictions (e.g., the Ottawa IT sector and the stimulus provided by federal procurement decisions is frequently cited). Strategic decisions could help build capacity in the private sector locally that would generate economic impact as skills and products are later exported, with jobs created here in the province.
- Government is not perceived as a partner in procurement, but as a risk minimizer. In other words, government expects vendors to bear the bulk of the risk in projects. In other contexts, vendors and clients share risk. Government needs to find a way to share risk and reward with its suppliers if it wants them highly motivated and involved.
- We were told that government (including Crown Corporations) sometimes abandons or materially changes the terms of a procurement while it is underway. This is costly for companies. It is particularly difficult for the local branches of large national or international firms. They compete internally for the resources necessary to put in a bid, and lose credibility and the ability to successfully respond to future requests when distant managers perceive the Saskatchewan government as an untrustworthy partner in procurement exercises.
- Several participants in our meetings observed that there are differences in the way companies approach the private and public sectors. The private sector approach is to determine how vendors can help organizations achieve what they need

**Canada has a smaller domestic market than many other countries. This makes it more difficult for small or medium-sized companies to build sufficient capability and scale at home before going international. Government procurement can help companies achieve these goals and, in the process, help new technologies emerge.**

*Six Quick Hits for Canadian Commercialization.* Conference Board of Canada, April 2005.

to succeed. On the other hand, the government approach is to tell government what it should do rather than recognizing the constraints under which governments operate.

Conversely, government does not consider that the procurement process should begin before an RFP (Request for Proposal) is issued. Instead of inviting an earlier discussion on the policy context of the problem to be solved, governments issue RFPs in which they have already determined the solution and the requirements. If firms know at a deeper level what is being attempted, they can give more appropriate responses. Often in the private sector, firms responding to RFPs work very closely with the client to understand the needs and respond to them, and this kind of relationship is not perceived to be as frequent between the government of Saskatchewan and its potential suppliers.

The research backs up many of our informants' views and indicates that government IT procurement is more successful when not treated as "pencil and paper" buying. Traditional buying methods sometimes have unnecessarily complex specifications, don't leverage bulk purchasing, consider only lowest cost, and assign risks to vendors. Traditional procurement does not lend itself well to IT projects that are often multi-department and multi-year.[2]

On the other hand, solutions-based procurement considers best value rather than lowest cost. The purchase of IT products and services benefits from shared risk, involving vendors from the outset of the process, using outcome, or performance based specifications rather than specific products; selecting the "best-value" rather than the lowest-cost bidder, and share as much information about the problem to be solved and performance requirements as possible with bidders.[3] In Canada, solutions-based IT procurement has been adopted by jurisdictions in British Columbia, Quebec and the federal government.

Another model of IT procurement is the formation of long-term strategic partnerships. An example is the Information Services Corporation of Saskatchewan (ISC) that works with its private

[2] National Governors Association Center for Best Practices. *The View from the IT Industry - What States can do to Improve Government Efficiency and Service Delivery.* July 2005.

[3] World Information Technology and Services Alliance. *Best Practices in IT Procurement.* April 2004.

sector partners, ISM and EDS, to deliver the corporation's IT services. The "shared risk, shared reward" approach encourages innovation, ensures quality of service, provides predictability, and enables ISC to find solutions to business problems, rather than focusing on "IT projects."

We think that IT procurement reform would benefit both government and industry in Saskatchewan because it would lead to more successful government IT ventures, solutions to business problems, and more opportunities for innovative IT companies to add value to government operations.

We believe that a procurement model that will best meet government's needs includes the following features:

- Putting out solution-oriented RFPs that ask vendors to propose IT solutions to problems and objectives.
- Consolidating contracts where feasible to simplify the procurement process and ensure that IT is implemented on a government-wide level.
- Using value-based purchasing rather than lowest cost that looks at life-cycle costs, local economic development implications, vendor performance, quality and other benefits.
- Forming long-term strategic partnerships with qualified vendors to solve IT problems.

***RECOMMENDATION 3:***

***We recommend that the Government of Saskatchewan adopt value-based IT procurement aimed at developing strategic partnerships with shared risk.***

**The era of hierarchical government bureaucracy is coming to an end. Emerging in its place is a fundamentally different model — governing by network — in which government executives redefine their core responsibilities from managing people and programs to coordinating resources for creating public value.**

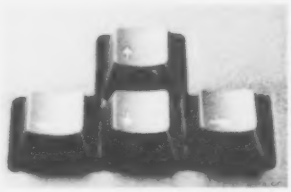
Stephen Goldsmith and William D. Eggers, *Governing by Network: The New Shape of the Public Sector,* Washington: Brookings Institution Press, 2004.

### 2.1.2 *Public Sector Competition with IT Providers*

There is a sense that government — executive government plus the Crown sector — is the biggest competitor of many firms in the IT sector in Saskatchewan.

- Private sector providers of services view government's insourcing of IT services as an attempt to build empires inside government on the basis of an efficiency argument. This practice runs counter to what is frequently seen with other clients and runs counter to industry best practices.

  Research has shown that all things considered, insourcing versus outsourcing has approximately the same short-run cost; however, there can be a significant up side when strategic outsourcing is used as an economic development tool to grow capacity and export potential.



- There is a view sometimes heard in parts of government that government can actually lead in the development of the IT sector. That is, some government employees expect that government IT projects for citizens can create an environment that is leading edge, and then the private sector will follow government's example. We do not know of any other jurisdiction where this has been the pattern of development of the IT sector. Government can certainly take on leading-edge projects and should certainly be encouraging key developments, but it will not in itself drive the growth of the sector.

- Many feel that SaskTel is a particular problem. The corporation is perceived to have a competitive advantage when bidding on government contracts.

- Finally, SaskTel's competition with the private sector is seen as a discouragement for the investment of capital in private firms.

We recognize that some of the opinions about SaskTel's unfair competitive edge might be made from self-interest. However, many in the IT industry perceive SaskTel as a challenge and we believe that clarification of the corporation's role and mandate will dispel many of the less favourable perceptions of SaskTel.

*RECOMMENDATION 4:*

***We recommend that the Government of Saskatchewan clarify the role of SaskTel as a competitor in the procurement process and that SaskTel clarify its mandate and role as a competitor in the IT industry. In particular, this clarification should stress the importance of forming partnerships with local providers, and of stimulating capacity building and economic growth.***

## *2.1.3 Government IT Consolidation and Implications for the IT Industry*

- Some have the perception that the Saskatchewan government's Information Technology Office (ITO) is insourcing and consolidating at a time when trends elsewhere are towards outsourcing.
- Solutions implemented internally to government do not contribute to growth in the sector and in the economy more generally. Further, many commented that neither do so-called body shop contracts build capacity. By "body shop" contracts we mean government contracts that simply require IT workers who are relatively easy to obtain. Body shop contracts are viewed as lowest common denominator commodity buying and do not build capacity. These are typically offered — or at least are perceived to be offered — simply to avoid taking on the continuing employment commitment in government. Such contracts neither provide stable jobs nor encourage the retention of the highly skilled workers we say we want to retain.
- There is an expressed desire that the ITO communicate its IT consolidation plans to the industry in order to enable firms to adjust to the changes and look at new opportunities.

Consolidating and rationalizing IT is not unique to the government of Saskatchewan. Organizations from large firms such as Nortel and Hewlett-Packard to governments at all

**Strategic sourcing is not about technology, or just about outsourcing current IT services. It is about the way that the roles and responsibilities of the public and private sectors are blended to deliver and manage electronic services.**

Andrea DiMaio,
Research VP,
Gartner Inc.
*"The How, When and Why of Public Sector Outsourcing."*
Computing
(July 16, 2003)

levels are re-organizing their IT functions to save money and operate more efficiently. Perhaps most importantly, they are doing it to provide better services to their customers and citizens. This change in the way governments and companies do business is recognized as necessary and beneficial both to the bottom line and to service quality.

We see the necessity of the current government initiative. Also, we recognize that IT spending by government — executive government and the Crown sector — is one of the largest tools available for investing in capacity growth in the sector, and one of the tools with the largest potential leverage impact. From a base of government contracts, local firms can develop the capacity to export services and products.

Further, and perhaps not so obviously, local branches of national and international firms can use government contracts to develop capacity locally in their Saskatchewan operations that can also be used to export services and products to other regions where their firms are doing business. From a Saskatchewan perspective it can be attractive to develop a local expertise within a large multi-location firm that attracts business and jobs here, just as it can be attractive to develop such a capacity in a local Saskatchewan firm.

However, we recognize that just as firms cannot rely on government for their revenues, nor should the government of Saskatchewan outsource all of its operations in order to foster industry growth. Nonetheless, the government can develop a sourcing strategy that will make the optimum use of internal and industry resources and services to ensure that government's objectives are met at the lowest risk.

While procurement is a key piece of sourcing, it is not the only piece. Government will want to, and should, retain certain functions in-house. However, there is an opportunity to take advantage of the innovation and strengths of the province's IT sector by working with the industry to identify where it can most add value to meeting government's goals and communicating that to the industry.

***RECOMMENDATION 5:***

***We recommend that the Government of Saskatchewan in consultation with the IT industry clarify the goals of the Information Technology Office with respect to insourcing and outsourcing. In particular, this clarification should address the importance of forming partnerships with local providers and indicate how the ITO will use strategic sourcing to build capacity in the private sector.***

### *2.1.4 Other Considerations*

Over the past few years, there have been several initiatives to grow the IT industry in Saskatchewan, such as: the Regina Regional Economic Development Authority (REDA) IT cluster sub-committee; the Saskatoon REDA sub-committee; the ITO IT symposium; the Action Saskatchewan sub-committee; Saskatchewan Advanced Technology Association (SATA) activities; and the Regina IT Forum. All of these initiatives focused on the growth of the Saskatchewan IT sector.

However, in the course of our work, it became apparent to us that the province's IT industry would be better served if there was one organization that represented its interests. This association would draw upon both the government and the private sector in order to foster industry growth as measured by new jobs, R&D initiatives, commercialization ventures, investment and exports. We see an IT industry association contributing to the good work that SATA is doing for the advanced technology sector as a whole. We think that a good model is that of the Saskatchewan Trade and Export Partnership (STEP), a non-profit private-public partnership to promote industry growth. Our expectation would be that Government would participate as a funding partner for at least an initial period of up to three years. Industry participants should decide whether having the organization as a component of SATA would best serve their needs.

**We cannot afford to fall further behind. Frankly, I find it puzzling that here in Canada — where we have sectoral councils in sector after sector — there is no sectoral council for ICT. To bring together all the stakeholders. To identify the gaps. Define the skills we need. To address the full range of these critical human resource issues. And keep them on the public priority list.**

Michael J. Sabia, CEO
BCE Inc. and Bell Canada
Keynote Address to
*"E-commerce to E-economy: Strategies for the 21st Century"*
Kanata, Ontario
September 27, 2004

In order for our provincial government to be an active catalyst in the growth of the Saskatchewan IT sector, we believe that the private sector has a vital function to work with government in the fostering of economic development. We see a role for an on-going advisory group that will continue to advise government on IT industry-related matters and to monitor measurable progress and accountability for action.

*RECOMMENDATION 6:*

***We recommend that the Government of Saskatchewan and industry together fund a provincial IT sector organization to facilitate interaction and growth in the sector***

*RECOMMENDATION 7:*

***We recommend that the Government of Saskatchewan create an on-going advisory group of private and academic sector leaders to track the impact of this Report's recommendations and industry growth, and to advise government on ongoing IT sector policy development.***

## 2.2 *Commercialization*

The mandate of the Council directed us to address commercialization — promoting collaboration among researchers, industry and other entrepreneurial activities to transform innovation into marketable goods and services. Commercialization is the key to wealth creation. Much more than simply taking a good idea to market, commercialization is a social, cultural and economic process that involves innovators, universities, companies, government, and financial backers.

**Growth in the size of Canada's firms is a result — albeit an important one — of their ability to innovate, rather than the goal itself. ... Innovation is a means to an end, not the end itself. The end is value.**

Conference Board of Canada
*Don't Overlook the "MEs": Medium-sized Firms Show the Way to Global Success.*
January 2005

Participants in our processes had a number of concerns:

- There is considerable agreement that there is not enough commercialization in Saskatchewan, whether defined narrowly or broadly. There needs to be more capacity to deal with the gap between innovative ideas and products.
- Many in the sector feel that the real growth opportunities for the sector lie in export, and that commercialization of ideas is the key to driving exports.
- It would be wrong to look for government grants to serve as the mechanism for bridging this gap. Government can play a role in shaping an environment, but should not be continually paying the cost of the operation of the system.
- The province's two universities have well-established intellectual property (IP) policies. At the University of Regina, ownership is left with the creator — inventors, authors, and creators own everything. At the University of Saskatchewan, ownership of copyrightable materials rests with the creator (except for 'work for hire') but the university owns 'potentially patentable' inventions.
- However, this is not the case with the government of Saskatchewan, which does not seem to have a consistent policy regarding IP.
- Small companies often need help with some of the basic skills that are required to turn an idea into a product. They might be strong technically but lack marketing skills, for example.

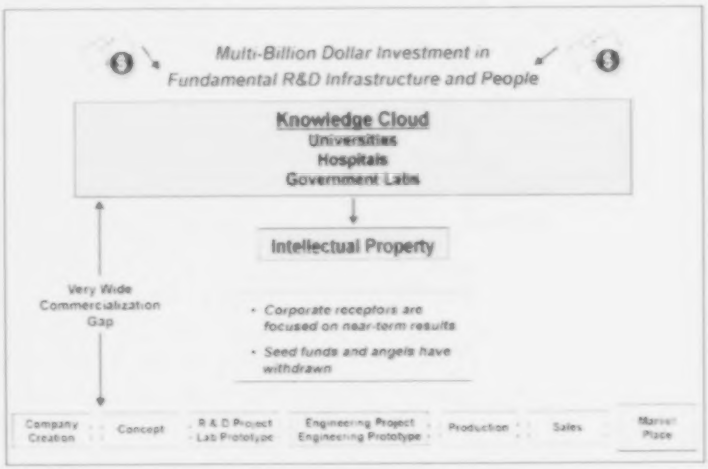
**Instead of focusing on growing small firms into large firms, we should focus on creating and developing more innovative firms in the Canadian economy, and on increasing the potential of medium-sized companies [those with 100-499 employees].**

**By nurturing the creation of more innovative companies, the Canadian economy can become populated by businesses with higher profitability, higher productivity, increased domestic and international market share, greater flexibility and improved speed-to-market.**

Conference Board of Canada
*Don't Overlook the "MEs": Medium-sized Firms Show the Way to Global Success.*
January 2005

The universities are a key driver of innovation, and several of the province's leading technology firms owe their start to university-based innovation and experience. However, researchers by themselves do not pursue commercial opportunities (*Figure 2*). Industry liaison or technology transfer offices can and must help to bridge the gap between innovative ideas and products, and assistance from government programs has been very important.

*Figure 2: Innovation Gap*




Source: Primaxis Technology Ventures, Inc., 2004

We believe that commercialization does not necessarily have a narrow definition that focuses only on the patent protection of new intellectual property, as important as that is. Certainly having existing firms generating ideas that need patent protection is a good thing. Universities often put much of their work into the public domain, and often the largest form of "technology transfer" out of universities takes place when highly qualified graduates leave and go to work. This is undeniably important, but it is not enough. It is also important to stimulate a broad set of commercialization activities that use our locally developed knowledge to create wealth, whether or not the ideas are protected by patent.

We think that one way to stimulate the interchange of ideas — both technical ideas that can lead to products, and ideas about how to develop successful businesses — would be to have more

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We think that one way to stimulate the interchange of ideas — both technical ideas that can lead to products, and ideas about how to develop successful businesses — would be to have more

opportunities for interaction and networking among the participants in the sector and facilitate the interaction of Saskatchewan IT professionals with IT professionals in other jurisdictions. Further, we need instruments that support commercialization of IT innovations, similar to those in other targeted sectors. We would benefit from thinking in terms of innovation and external markets as opposed to internal needs.

**More new ventures fail because of poor marketing than because of poor engineering or poor financial management.**

Denzil Doyle, Making Technology Happen

We note that the federal government has established a Commercialization Panel of experts to advise the government on:

- What can be done to simplify and encourage the introduction of new processes and products into the marketplace while protecting the public interest.
- How to better harness the potential of new knowledge and technologies generated using public funds for developing practical applications and innovations for the benefit of industry and ordinary Canadians.
- Whether Canada has created the right environment for commercialization, including availability of risk capital, skills, infrastructure and security of intellectual property.

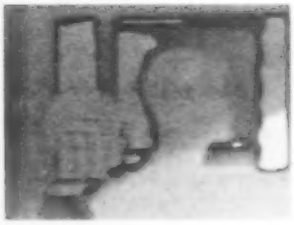
**I don't care about technology. I only care about how you make money from technology.**

Michael O'Neil, Managing Director, IDC Canada

We look forward to the Panel's report, due later this year, and the implications for Saskatchewan's IT industry.

Further, we concur with the 2005 *Saskatchewan Action Plan for the Economy* which states:

> *With its successful track record in applied research and innovation, Saskatchewan is poised to lead the way in the new knowledge-based economy through the transfer and commercialization of technology. Our vision is to link technology and innovation with the province's resource and manufacturing sectors to create high-value products and high-paying jobs for Saskatchewan people....*
>
> *This action plan builds on our expertise in agricultural biotechnology, petroleum research, medical and pharmaceutical research, software development and greenhouse gas research. Our vision is to commercialize advanced technologies and bring innovation and new, high-value products and services into the international marketplace.*
>
> *ACTIONS*
>
> - *Establish new innovation 'incubation' centres at provincial universities and research parks to act as a catalyst to transfer technology innovations to the marketplace.*
> - *Facilitate the commercialization of new technologies by providing researchers and entrepreneurs with business development assistance and a new venture capital fund.*



We have seen the success other industries such as ag-biotech have achieved in part due to the climate of growth the government has created for them. We believe that the IT sector also could benefit from similar targeted actions.

***RECOMMENDATION 8:***

***We recommend that the Government of Saskatchewan develop commercialization, technology transfer and innovation capacity in Saskatchewan as outlined in its 2005* Action Plan for the Economy, *include the IT industry as a targeted growth sector, and publicly quantify economic growth arising from these initiatives.***

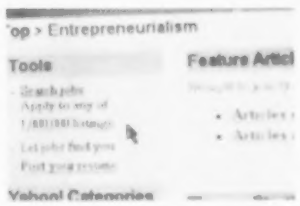
### *Retention of Intellectual Property*

**We live now in a world in which the organized ability to create and commercialize new ideas is the critical determinant of economic success.**

John Evans,
Canada Foundation
for Innovation

Regardless of varying opinions regarding the role that government should play in the economy, there is general agreement that government policies and initiatives can help drive, but not control economic growth. The research also indicates that government requirements to meet objectives can spur innovation. With that in mind, we examined how government might stimulate industry growth by enabling innovators to commercialize their products and services that they create for government's use.

At present, there is no uniform government policy on ownership of intellectual property that is created as a result of expenditures on government contracts. Sometimes the government retains the ownership of IP, and at other times it retains IP but licenses it to the private sector. In some instances, the government also allows vendors to retain the IP developed as the result of a government contract. We prefer to see IP developed into commercial goods and services, because while government is often a driver of innovation, it is not in the business of developing and marketing commercial products. IP is more likely to be used if it is retained by the creators and commercialized privately.




As we have seen in British Columbia and other jurisdictions, we believe the most effective way to increase economic development and job creation is to make government-owned IP available to the private sector to commercialize, and to leave IP in the hands of vendors whenever feasible. In such arrangements, the government would retain an ongoing license that provides full and unrestricted access to the IP. Such a practice would provide the province with a revenue stream from licensing IP while stimulating private sector growth.

***RECOMMENDATION 9:***

***We recommend that the Government of Saskatchewan implement policies that promote the use of IP and leverage it by allowing private sector developers normally to retain ownership of intellectual property in government contracts.***

### *Entrepreneurial Leave of Absence*

Although the private sector plays a pivotal role in developing intellectual property to meet government's needs, at times commercially viable products are developed internally by government employees. We see a role for government to play in stimulating growth by enabling these products to be commmercialized, especially if they have export potential.

While encouraging the commercialization of R&D and investment in early stage companies, we also recognize that due to the nature of the province's Crown corporations, the government of Saskatchewan plays somewhat of a larger role in IT development than governments in other provinces (in 2004, five Crown Corporations were among the top twenty businesses in the province, according to Saskatchewan Business). For example, Crown corporations have developed Express*Address*, which allows people to visit the Internet to change their address once and apply the change to multiple provincial and municipal services such as energy, power, telephone, taxes and water. Information Services Corporation developed the province's land titles system. SaskTel is involved in a number of IT-related developments that it markets both in and outside the province.

We appreciate the benefits of these government initiatives, but believe that the best place to market these products is in the private sector with the government receiving a royalty for its original investment. We also believe that initiative should be rewarded and that the developers should be given an opportunity to commercialize their inventions, especially if the products have export potential.

As some of the largest employers in the province, the government of Saskatchewan and the Crown Corporations have the opportunity to impact economic development in this province by offering their employees an entrepreneurial leave program. The contribution of Crown Corporations to a long-term strategy in fostering entrepreneurship is critical as they are a substantial proportion of the large enterprise firms in the province.

Several American laboratories and public sector organizations have made provision for such a technology commercialization-related leave, and the province of New Brunswick provides entrepreneurial leave of up to three years for employees who want to start any type of business in the province. Such a program could benefit the IT sector, but also could benefit other sectors as well.

***RECOMMENDATION 10:***

***We recommend that the Government of Saskatchewan and Crown Corporations consider establishing an Entrepreneurial Leave of Absence program to give employees who have developed technologies with export potential the opportunity to establish companies to commercialize their products.***

*VCom Lab*

**When it comes to gaining access to risk capital in Canada, it is difficult to get funding in amounts less than $5 million or greater than $100 million.... Institutional investors are reluctant to do deals for less than $3 million because their due diligence costs are the same as those for larger deals.**

**This gap can be bridged by seed financing. The most effective source of seed financing is the individual who has invested before and understands the risks: the angel investor.**

Conference Board of Canada. *Six Quick Hits for Canadian Commercialization*, 2005.

## *2.3 Capitalization*

We were asked to provide advice to the Minister on capitalization requirements to fuel the growth of the IT sector in Saskatchewan. In particular, we were asked to consider ways of attracting private venture capital to Saskatchewan. This is an area where there is a great divergence in what we heard, and where it takes some careful work to understand the true situation.

- There is a belief that traditional lenders are more risk averse in Saskatchewan, and that they prefer to invest in capital assets rather than in technology. Most of the banks have cut back their commercial lending divisions in recent years in Saskatchewan.
- Government has targeted some industries, such as oil and gas or ag-biotech, and there is a belief that there is more venture capital available for development of those industries as a result.
- The provincial government has turned over some of its commercial lending and venture capital initiatives to the private sector. This has been good for the operators of venture funds as it relates to capacity building in this sector.
- Saskatchewan venture capital firms are making smaller investments than they did in the past. This will be acceptable because so many of the firms here are small to medium-sized, with a corresponding lesser need for capital than might be the case in other jurisdictions.
- Only a handful of IT firms in the province ever look for venture capital. Others fuel their own growth, which may mean that they do not grow as quickly as they could if they responded aggressively to their market opportunities.
- In particular, it is felt that early stage seed money is not sufficiently readily available. Relatively small investments in the range of $100K to $500K can make a big difference at certain stages of the development of a product or service, and investments of that scale are thought to be not sufficiently available.
- Some other sectors or public policy initiatives have been stimulated by tax incentives in this province or elsewhere

(energy saver credits for appliances, angel investor credits, research and development credits). Tax credits are relatively inexpensive in that the government is not giving up existing revenue but simply reducing its expectations about revenues not yet created. It could be a good thing to stimulate the IT sector with tax credits.

Traditional lenders such as banks generally prefer to fund industries with capital assets. The IT sector generally is a non-asset-based industry class. Depending on the stage of development, companies often direct capital at market and product development rather than hard assets. In addition, the diversity and technological proficiency associated with the sector is incompatible with the financing goals of traditional debt lenders. In Saskatchewan the problem is magnified as many commercial banks have become less aggressive and reduced their presence and loan portfolio in the province. The Fast Consulting report is consistent with this thought as 68 percent of IT companies confirm being self-financed.

We believe that the IT sector in Saskatchewan should be focused on venture capital rather than traditional capitalization. Venture capital, a relatively new industry in Canada since the early 1990's, is most often equity capital that is a major factor to creating jobs in small and medium sized companies (SMEs). Since 1990 the amount of venture capital under management in Canada has grown from approximately $3.0 billion to $21.0 billion as of 2005. Although the venture capital sector in Canada lags behind the size and maturity of the United States, in both countries the IT sector is generally the largest recipient of venture capital in terms of dollars and financings.

Saskatchewan has historically not attracted its proportionate share of venture capital. Venture capitalists tend to invest in management, close to home, and in syndication with other venture capital companies. Until the past five years Saskatchewan has had no private sector venture capital economy because it has been viewed as an agricultural driven economy which is predominately not what venture capitalists invest in, given the added commodity risk.

In recent years, the government of Saskatchewan has acted to stimulate economic development by targeting industry sectors such as oil and gas and to build the private sector venture

capital industry, via labour-sponsored fund tax credits and privatization of the Government's investment portfolio. As a result, venture capital activity in the targeted sectors and the province generally has increased. This is confirmed by independent reporting agencies like MacDonald and Associates.

Consultations with the private sector venture capital industry in Saskatchewan (Primaxis, Golden Opportunities Fund, SaskWorks Venture Fund, Working Opportunities (W.V.) Fund, BDC, and Prairie Venture Fund) suggest that there is adequate availability of venture capital for the IT sector in Saskatchewan. All funds invest in IT. All funds confirm they see limited submissions for funding in the IT sector regardless of stage of development. The Fast Survey confirms this view; only four percent of companies surveyed reported venture capital placements in the past year (*Figure 3*).

*Figure 3*

Source: IT Industry Benchmarks and Measures (Fast Consulting, October 2005)

The majority of funds including Golden Opportunities, SaskWorks, and Growthworks confirm having completed an IT deal in the past three years. Upon review of the particular investments, however, it can be concluded that the transaction would be classified in the growth or expansion stage. This would be consistent with national venture capital trends in the past five years, since the IT Bust in 2000, with venture capital firms in Canada moving away from early stage IT companies to

mature and follow on financings. This trend, however, is starting to turn around.

The other factor contributing to this trend that is unique to Saskatchewan is the late development of the private venture capital sector in Saskatchewan. The smaller size of the funds, in the midst of capitalization, is a deterrent to investing in early stage IT companies, given the risk tolerance to size of the fund.

The infancy of the venture capital sector and a Saskatchewan IT sector that is composed of a large number of relatively small, early-stage, or non-asset-based companies has prohibited the sector from growing. Fast Consulting reports that 45.8 percent of the IT sector had revenues of less than $500K and 49 percent had five or less employees. At the same time only 1.0 percent of the sector had used venture capital as a source of financing.

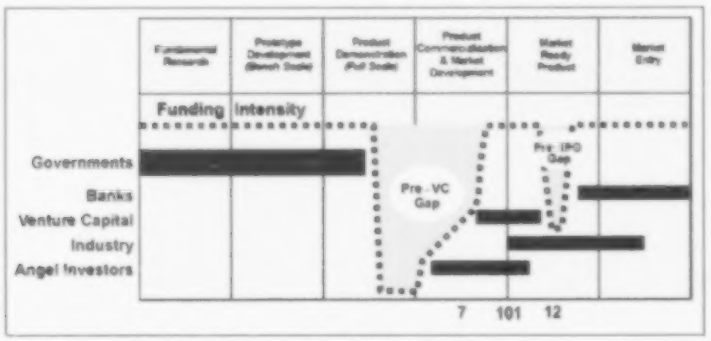
Our research indicates that there is a funding gap for early stage transactions in the IT sector for the following reasons:

- The risk associated with the transaction is excessive in relation to the maturity level of the venture capital sector in Saskatchewan.
- Venture capital companies invest in management. Early stage companies do not have the management expertise or team given their financial capacity.
- Local venture capitalists do not have the skill set to properly understand the opportunity.
- Saskatchewan IT companies, regardless of stage, historically have not had access to venture capital companies and do not have an understanding of the process or concepts of valuation, equity, and institutional shareholders.

However, these early stage or start-up companies are often in need of business or mentorship skills to increase the probability of success, and can benefit from venture capital.

The funding gap can best be addressed by angel investors and venture capital companies led by individuals who have made their wealth in leading technology companies and are now investing in new companies (*Figure 4*). Saskatchewan has little depth and presence in both areas. No formal angel network exists in Saskatchewan although it is often a topic of discussion among economic development authorities, chambers and industry associations.

*Figure 4*




Source: MacDonald & Associates, October 2002

This early stage capital and mentorship provided by angels addresses the needs of IT companies at the proof of concept stage. Once they have passed this stage, there is an adequate venture capital market to address mid to late stage needs. British Columbia has implemented a 30 percent angel tax credit and reports that for every dollar in tax credits it returned $1.30 in new tax receipts to the Provincial treasury. As well, seed and early stage venture capital has consistently yielded the highest returns in the United States (*Figure 5*).

*Figure 5*

| | *3 Year* | *5 Year* | *10 Year* | *20 Year* |
|---|---|---|---|---|
| **Seed/Early Stage Venture** | **-23.3%** | **54.9%** | **37.0%** | **18.1%** |
| Late-Stage Venture | -18.8% | 3.6% | 17.0% | 13.8% |
| Buyouts | -2.1% | 2.2% | 7.8% | 12.4% |
| Mezzanine | -1.1% | 6.8% | 7.3% | 8.8% |
| All Private Equity | -7.0% | 8.8% | 12.7% | 13.6% |

Notes: Venture Economics' US Private Equity Performance Index (PEPI) Returns for Investment Horizons Ending December 31, 2003.
Source: Thomson Venture Economics/National Venture Capital Association. (From: Primaxis Presentation, December 17, 2005)

*RECOMMENDATION 11:*

***We recommend that the Government of Saskatchewan offer a 30 percent angel investor tax credit to stimulate capital and mentorship to early stage IT companies.***

*RECOMMENDATION 12:*

***We recommend that the Government of Saskatchewan continue its commitment as a facilitator of early stage funds and incorporation of mentorship and management support programs by implementing its commitment to establish a new venture capital fund as stated in the 2005* Action Plan for the Economy.**

**Government information system projects can create demand for trained people, stimulate the growth of services companies, and establish models for careers for software professionals, while at the same time improving government operations and services to citizens.**

Tessler, S., Barr, A, Aldo Ventures, Inc., and Hanna, N., World Bank. *"National Software Industry Development: Considerations for Government Planners."* The Electronic Journal on Information Systems in Developing Countries (2003) Cited in: World Information Technology and Services Alliance. *Best Practices in Government IT Procurement,* April 2004

## *2.4 Citizen Services*

Our original terms of reference included a consideration of citizen services — delivering government services to Saskatchewan citizens. In conversations with the Minister we learned that government intended to focus on this issue internally. However, as we carried out our work it became clear that this was not separable from the other aspects of our work — either in the minds of participants in our consultative processes, or in the minds of members of this Council. So we have included a limited consideration of this topic in our report.

- Some have an impression that government has not focused on an agenda to address the challenges facing the province. We have also heard that traditionally government operates in an environment where change and risk taking are not allowed.
- There is a great deal of interest by vendors of IT services in working with governments of all levels in order to transform the way in which government operates, and specifically the way in which it delivers services to citizens.
- There is a great deal of activity in every jurisdiction on this front, and every major service firm is heavily involved.

The Internet has had a significant impact on the range of options government has to respond to how it delivers service to people. The initial, narrower view is that e-government means using the Internet to transact business. The broader view is that it means "the use of digital technologies to transform government operations in order to improve effectiveness, efficiency, and service delivery."[4]

In general, governments face common problems affecting how they do business and interact with the people they serve. Cyclical budget pressures, the need to integrate services, privacy and security concerns, aging populations, and rising demands for improved services and support are challenges faced at all levels. Governments have to meet these changes in a global economy that has changed traditional economic rules and in which information flows freely across borders.

In order to meet citizens' expectations, governments have to transform processes and integrate operations across the whole of government. Further, they have to implement changes within very tight financial constraints by finding ways to save money and reinvest in services that meet public demands.

Enabling government employees is a critical part of implementing successful changes. No organization can successfully implement change without equipping its workforce with the skills and tools to operate in the new environment.

This transformation is about more than putting government services online and creating portals to improve citizen's service experience. It is about creating an integrated government with cross-departmental processes designed to achieve better outcomes for the citizen.

An example of service delivery reform is the Revenue Management Project in British Columbia. As is the case in Saskatchewan, in British Columbia revenue collection takes place in many ministries. There are 40 accounts-receivable IT systems dispersed across these ministries. The Revenue Management Project intends to create an integrated and streamlined business and systems environment focused primarily on the consolidation of non-tax revenue management

[4] Todd Ramsey, *On Demand Government – Continuing the e-government Journey*, September 2004.

functions across government. The outcome will be a centralized business group responsible to improve customer service, reduce bad debt expenses and lower borrowing costs to government on behalf of all ministries.

Companies who presented on this topic have a great deal of experience in e-government initiatives at all levels, and presented a wide range of ideas on opportunities that they believed would benefit how government serves the people. However, we believe it would exceed our mandate if we were to provide specific comments on the merits of these. We were impressed by the sincere desire on the part of the firms to make a real difference in the province and to contribute to its success. We would like to see a formal mechanism that would enable companies and the government to collaborate on integrated service delivery initiatives.

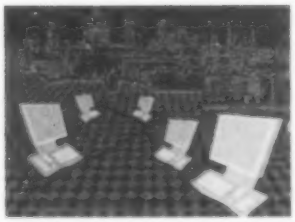
***RECOMMENDATION 13:***

***We recommend that the Government of Saskatchewan create a forum where the private sector and government could explore opportunities in which integrated service delivery could reduce costs and improve the outcomes for Saskatchewan citizens and businesses.***

One of the common themes in the contributions we received was risk-adversion in Saskatchewan — both in the business and the government culture. In order to ensure success in advancing the IT sector in the province, it will be necessary to overcome this.

In particular, government is perceived as being risk adverse. Some of this perhaps arises because of the failure of past IT projects that had a great deal of visibility and expectations associated with them, but failed to deliver what was expected. There is a cynicism evident in the broader community and a caution inside government as a result.

Some of the risk adversion in government perhaps arises because there is no sense of urgency about the need to innovate in government using IT. Past methods and approaches have worked and perhaps can be expected to continue working.



How can this Council as it delivers its report, and the Minister and government as they receive the report, ensure that this report is not another contribution to the sequence of failures to meet expectations?

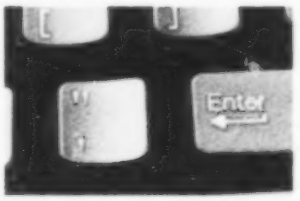
## *Measurable Benchmarks*

We believe that the recommendations provided in this report will address our mandate. Some of the initiatives may need to be implemented over time in order to achieve the desired results and impact on the industry and province. In order to ensure the actions are implemented, modified as needed and sustained long enough to achieve the desired results, we recommend that the Information Technology Office track and publicly report key measurable benchmarks annually.

We drafted key measurable benchmarks that could be used to monitor the industry over time, and Fast Consulting undertook the work to provide the baseline measures. A combination of secondary and primary research data should provide the government and the industry with the required feedback on the impact of implementing actions with respect to our mandate.

***Measurable Benchmarks (see Appendix 6 for the baseline data):***

- Saskatchewan ICT Sector GDP as a percentage of the National ICT Sector GDP.
- Saskatchewan export of ICT Goods and Services as a percentage of the National Export of ICT Goods and Services.
- Number of IT businesses in Saskatchewan categorized by number of IT employees
- Number of ICT businesses in Saskatchewan as a percentage of ITC firms in Canada.
- Saskatchewan IT workforce as a percentage of Canadian IT workforce.
- Source of financing for Saskatchewan IT companies (self- financed, angel investor, traditional debt, sub debt, venture capital).
- Number of VC placements and deal size for Saskatchewan IT companies.
- Number and size of procurement opportunities awarded to IT companies in Saskatchewan.




***RECOMMENDATION 14:***

***We recommend that the Government of Saskatchewan respond to our Report in writing and host a follow-up IT Symposium to give the IT industry an opportunity to provide input into the government's "next steps."***

***RECOMMENDATION 15:***

***We recommend that the Government of Saskatchewan and the industry advisory group described in Recommendation #7 undertake an annual update of the benchmarks we have identified in our Report and publicly report progress.***

## 4.0 Appendices

### *4.1 Gathered List of Recommendations*

1. We recommend that the Government of Saskatchewan continue to develop the use of the broadband infrastructure, and make it available to the private sector at commercially competitive rates to allow Saskatchewan companies to exploit this strategic telecommunications advantage.

2. We recommend that the Government of Saskatchewan offer a "First Jobs" program that assists SMEs in hiring the expertise to develop, commercialize and market IT products and services, and provide employment opportunities for recent IT graduates in Saskatchewan.

3. We recommend that the Government of Saskatchewan adopt value-based IT procurement aimed at developing strategic partnerships with shared risk.

4. We recommend that the Government of Saskatchewan clarify the role of SaskTel as a competitor in the government's procurement process, and that SaskTel clarify its mandate and role as a competitor in the IT industry. In particular, this clarification should stress the importance of forming partnerships with local providers, and of stimulating capacity building and economic growth.

5. We recommend that the Government of Saskatchewan clarify the goals of the Information Technology Office with respect to insourcing and outsourcing. In particular, this clarification should address the importance of forming partnerships with local providers and indicate how the ITO will use strategic sourcing to build capacity in the private sector.

6. We recommend that the Government of Saskatchewan and industry together fund a provincial IT sector organization to facilitate interaction and growth in the sector.

7. We recommend that the Government of Saskatchewan create an on-going advisory group of private and academic sector leaders to track the impact of this Report's recommendations and industry growth, and to advise government on ongoing IT sector policy development.

8. We recommend that the Government of Saskatchewan develop commercialization, technology transfer and innovation capacity in Saskatchewan as outlined in its 2005 *Action Plan for the Economy*, include the IT industry as a targeted growth sector, and publicly quantify economic growth arising from these initiatives.

9. We recommend that the Government of Saskatchewan implement policies that promote the use of IP and leverage it by allowing private sector developers normally to retain ownership of intellectual property in government contracts.

10. We recommend that the Government of Saskatchewan and Crown Corporations consider establishing an Entrepreneurial Leave of Absence program to give employees who have developed technologies with export potential the opportunity to establish companies to commercialize their products.

11. We recommend that the Government of Saskatchewan offer a 30 percent angel investor tax credit to stimulate capital and mentorship to early stage IT companies.

12. We recommend that the Government of Saskatchewan continue its commitment as a facilitator of early stage funds and incorporation of mentorship and management support programs by implementing its commitment to establish a new venture capital fund as stated in the 2005 *Action Plan for the Economy*.

13. We recommend that the Government of Saskatchewan create a forum where the private sector and government could explore opportunities in which integrated service delivery could reduce costs and improve the outcomes for Saskatchewan citizens and businesses.

14. We recommend that the Government of Saskatchewan respond to our Report in writing and host a follow-up IT Symposium to give the IT industry an opportunity to provide input into the government's "next steps."

15. We recommend that the Government of Saskatchewan and the industry advisory group described in Recommendation #7 undertake an annual update of the benchmarks we have identified in our Report and publicly report progress.

## 4.2 *Terms of Reference*

The Minister's Advisory Council on Information Technology was established in September 2004 to provide recommendations to government about IT-related decisions and policies. Chaired by Dr. David Barnard, the Council consists of nine Saskatchewan citizens with expertise and a record of leadership in all aspects of information technology.

Through a process of public consultation and research, the Council provides expert advice to the government on building a vibrant IT sector in the province and on utilizing IT to stimulate economic development in other key sectors of the economy. The Council submits its findings and recommendations directly to the Minister Responsible for Information Technology.

The Council has a mandate to provide direction on making Saskatchewan a global leader in the knowledge-based economy, specifically in the areas of:

- ***Capacity building*** – strengthening broadband infrastructure, business-relevant IT education and training, job creation and other supports for economic development.
- ***Commercialization*** – concept to marketplace strategies, collaboration between researchers and other industry players.
- ***Capitalization*** – attracting private venture capital, funding requirements for research.
- ***Citizen service*** – improving government services to the people of Saskatchewan.

## *4.3 Council Members*

### Dr. David Barnard (Chair)

Dr. Barnard recently assumed the role of President and CEO of iQmedX, a company providing software and services for the health sector. He previously served as President of the University of Regina from 1998 until the end of August 2005. Previously he was Vice-President (Administration) and Professor of Computer Science at the U of R. He came to the U of R from Queen's University, where he held numerous academic and administrative positions for almost 20 years. Dr. Barnard holds bachelor's, master's and doctoral degrees in Computer Science from the University of Toronto. He also has a graduate diploma in Christian studies from Regent College at the University of British Columbia.

### Dr. Hugh Wood

Dr. Wood is the Chief Operating Officer of Saskatoon-based VCom, a world-leading designer and manufacturer of CATV and wireless telecom products. He is a graduate of the University of Saskatchewan with degrees in Engineering and Applied Physics. Dr. Wood taught at the U of S for 20 years, first as a faculty member of the Department of Electrical Engineering and then as Department Head from 1993 to 2000.

### Garnette Weber

Garnette Weber is the Vice President and Executive Vice President of Finance and Human Resources for Itracks, a Saskatoon-based online market research, software and services firm. She received a Bachelor of Science degree from the University of Saskatchewan, gaining accounting and business administration experience with a family owned manufacturing business prior to her work at Itracks. Garnette was awarded the Saskatchewan Young Entrepreneur's Award from the Business Development Bank of Canada in 1999 and the Entrepreneur of the Year Award from Ernst & Young in 2001.

### Grant Kook

Grant Kook is the founder, Chairman/CEO of Golden Opportunities Fund Inc., Saskatchewan's first and largest provincial Labour-sponsored Fund and CEO of the fund manager, Westcap Management Ltd. The Fund has invested in over 42 Saskatchewan growth companies in 11 different industry sectors. Grant is President and Chief Executive Officer of Cheung On Investments Group Ltd. (Cheung On), an international investor syndicated fund. He has also been the President and CEO of the Ramada Hotels in Saskatchewan since 1992. Grant sits on the Board of the Canadian Venture Capital Association.

### Chris Krywulak

Chris Krywulak is President and CEO of iQmetrix Software Development Corp. Based in Regina and Minneapolis, iQmetrix is the market leader in retail distribution solutions for the Telecom sector. Prior to founding iQmetrix, he was President and CEO of Jump.ca, a multi-location wireless retailer. Chris sits on the Board of Directors for Regina Regional Economic Development Authority and the Business Advisory Council for Western Economic Diversification.

### David Luterbach

David Luterbach graduated from the University of Regina in 1986 with a Bachelor of Administration degree. After working in the Information Technology (IT) industry for seven years for various companies such as IBM, EDS, Massachusetts Financial, and Saskatchewan Agriculture and Food, David founded TMC in 1993. David, along with his two business partners, have built Regina-based TMC into a stellar IT consulting company with over 60 staff and three western Canadian offices.

### Dr. Rick Bunt

Dr. Bunt is an Associate Vice-President, Information and Communications Technology, and Professor of Computer Science at the University of Saskatchewan. He holds a bachelor's degree from Queen's University and master's and doctoral degrees from the University of Toronto. Dr. Bunt was a founding member of the DISCUS Research Group, a group of faculty members, research staff and graduate students sharing interests in the performance of distributed computing environments.

### Dave Pettigrew

Dave Pettigrew is the Saskatchewan General Manager for IBM Canada Ltd., and has overall responsibility for IBM's business in the province. He has held a variety of management, marketing/sales and technical roles in his 15 years with the company, based in both the Regina and Edmonton locations. Dave was born and raised in Saskatoon, and completed a Bachelor of Science in Mechanical Engineering from the University of Saskatchewan.

### Vlatka Tustonic

Vlatka Tustonic is a Senior Business Development Consultant with the Saskatoon Health Region (SHR), Business Development Unit, joining SHR in April of 2003. Prior to that, she spent seven years with TRLabs, Canada's largest and most successful consortium in applied telecom research, where her corporate responsibilities included managing the industry associates tech transfer and commercialization program, as well as all TRLabs health-related initiatives. Vlatka is a Director with the Saskatoon Chamber of Commerce Board of Directors and the Chair of its Health Opportunities Advisory Committee.

## 4.4 Acknowledgements

The Minister's Advisory Council on Information Technology thanks the many people whose assistance enabled it to achieve its goals and produce this report.

Participants of the IT Symposium, November 23, 2004, Saskatoon

***Public Consultations:***

December 17, 2004

Allen Clarke and Punam Burnett – SAIC
Hugh Hudson – IBM Canada
Steve Engel, Frank Hart, and Rhonda Eckstrom – EDS Canada
Rick Kraus – Cisco Systems
Mark MacLeod – Information Services Corporation
Dan MacMurtry – ISM
Mike Spelliscy and Barry Pearson – CGI Group

February 11, 2005

Jody Blackwell and Kent Smith-Windsor – Saskatoon Chamber of Commerce
Larry Hiles and Clare Kirkland – Regina Regional Economic Development Authority
Greg Sutton, Daryl Lemke, Dale Botting, Ravi Maithel, and Marie Savostianik – Saskatchewan Advanced Technology Association
Robert Watson – SaskTel

***Presentations:***

Ilse Treurnicht – Primaxis Technology Ventures, Toronto
Doug Elliott – *Saskatchewan Trends Monitor*
Tony Olvet – IDC Canada, Toronto
Don Wincherauk, Deputy Minister, Rory Norton, Richard Murray and Fred Antunes – Information Technology Office

***Staff Support:***

Jill McKeen – Information Technology Office

## 4.5 *Summary of the IT Summit*

On November 24, 2004, the ITO hosted a one-day symposium for IT industry representatives to discuss how to grow the province's IT industry, and how government and the private sector could work together to meet government's service delivery objectives.

Key themes that emerged were:

- IT sector growth:
  - Research is needed to establish a baseline against which to measure performance.
  - Export is the key growth opportunity.
  - Crown sector competition can be an inhibitor to growth.
  - Partnerships, alliances, mentorship and collaboration are essential.
  - Commercialization is critical.
  - Sales and marketing expertise is lacking.
  - Access to venture capital for early stage growth is needed.

- Public-private collaboration on enhancing government service delivery:
  - More trust needs to be built.
  - Procurement practices need to be reformed to allow partnering relationships.
  - Rather than build everything internally, government should take advantage of private sector expertise.

The full report is available at: **www.ito.gov.sk.ca**

## 4.6 *Summary of the Survey Data*

Fast Consulting and IDC Canada produced two analyses of the IT industry in Saskatchewan. Fast Consulting conducted research on the benchmarks that the Council identified, and surveyed a significant number of Saskatchewan IT firms to supplement the available research. IDC Canada's report compiled data from secondary sources that provides an in-depth look at IT spending and consumption in Saskatchewan.

The full reports are available at: **www.ito.gov.sk.ca**

***From IT Benchmarks and Measures: Final Report Summary. Fast Consulting, 2005.***

As one hundred and fifty-three (153) qualified ICT companies completed the survey — out of the approximate 300 to 432 Saskatchewan ICT companies — this represents roughly 50% of the ICT firms in Saskatchewan — an excellent participation level for the survey. Therefore, we can say with some certainty that the data collected is accurate and valid, providing an in-depth analysis of the Saskatchewan ICT industry. The survey of the 153 ICT companies yields relatively precise statistical measurements of perceptions with an overall level of confidence of 95% within a margin of error of plus or minus 7.9%.

- According to Industry Canada, Saskatchewan is only 2.54% of national ICT GDP.
- The total value of Canadian exports of ICT goods in 2003 was $18.7 billion, a mean score was derived which indicates that the average value of total gross sales spent on exporting is approximately 40%.
- Approximately half of the Saskatchewan ICT companies surveyed employ between 1-5 employees. One-quarter of ICT companies surveyed employ between 6-10 employees, and 4% of ICT companies employ between 51 and 100 employees.

- According to Industry Canada, Saskatchewan has approximately 300 ICT firms, in comparison to the overall national number of 32,000 ICT firms.
- An estimated 10,700 employees are employed in the Saskatchewan ICT sector, and the national ICT sector currently employs approximately 579,000 employees.
- 68% of ICT companies are self-financed. Other ICT companies finance through bank loans/lines of credit.
- 96% of the ICT companies surveyed indicate they did not have venture capital placements over the past 12 months.
- 71% of ICT companies that indicate they receive procurement opportunities, and had approximately between one and 10 procurement opportunities in the past 12 months.
- 86% of ICT companies indicate their companies are successful in being awarded proposal opportunities.
- Of the ICT companies that indicate they receive procurement opportunities, 58% of these companies had procurement opportunities valued at less than $251,000.

***From Saskatchewan ICT Profile. IDC Canada, 2005.***

IDC Canada's most recent market sizing and forecast pegs Saskatchewan's end-user information technology (IT) spending in 2004 at approximately $806 million. IT spending is forecast to grow modestly reaching just under $840 million in 2008 (all figures in Canadian dollars). Of the total IT spending, approximately 87% is generated by business and government organizations in the province. Telecommunications end-user spending as of 2004 was approximately $928 million.

However, in contrast to IT spending, business and government spending represent only half of all telecommunications in the province of Saskatchewan; the remaining half is from home/consumers. Total spending on telecommunications services is forecast to grow at a CAGR of 4.0% from 2003 to 2008 exceeding $1 billion in 2006.

Other key research findings from secondary sources that IDC has covered in the report include:

- Saskatchewan makes up 2.7% of total information and communications technology (ICT) spending in Canada.
- In 2002, the Gross Domestic Product (GDP) for ICT goods manufacturing in Saskatchewan was $136 million, and the GDP for ICT services was $860 million.
- The Prairie region (which includes Manitoba and Saskatchewan) produced approximately 1% of Canada's ICT manufacturing goods exports in 2002.
- When comparing all industries' contribution to exports, ICT only accounts for 1% of the Prairie region's exports (as of 2002).
- Software and computer services firms represented approximately 62% of total ICT firms in Saskatchewan in 2004.
- Saskatchewan employed approximately 1.5% of the total Canadian IT workforce in 2001.
- The average earnings of the IT workforce in Saskatchewan ranks sixth against other provinces in Canada.